What is claimed is:

1. A high voltage semiconductor device, comprising:

a high concentration collector area of a first conductive type;

a low concentration collector area of a first conductive type formed on the high concentration collector area;

a base area of a second conductive type formed on the low concentration collector area and having a trench which penetrates the low concentration collector area in a vertical direction at the edge of the trench;

a high concentration emitter area of a first conductive type formed on a predetermined upper surface of the base area; and

an emitter electrode, a base electrode, and a collector electrode isolated from one another and connected to the emitter area, the base area, and the collector area, respectively.

2. The high voltage semiconductor device of claim 1, wherein the width of the trench is 1/10 times the depth of the trench.

3. The high voltage semiconductor device of claim 1, further comprising an oxide layer which fills the trench.

4. A method of fabricating a high voltage semiconductor device, comprising:

preparing a semiconductor substrate having a high concentration collector area and a low concentration collector area of a first conductive type;

forming a base area of a second conductive type on the low concentration collector area;

forming a high concentration emitter area of a first conductive type on a predetermined upper portion of the base area;

forming a trench penetrating the base area and the low concentration collector area at the edge of the base area, spaced apart from the emitter area; and

forming an emitter electrode, a base electrode, and a collector electrode connected to the emitter area, the base area, and a semiconductor substrate, respectively.

5. The method of claim 4, wherein the trench is formed using a reactive ion etching method.

6. The method of claim 5, wherein the reactive ion etching is performed using Cl_2 or SF_6 as a reaction gas.

7. The method of claim 4, wherein the width of the trench is 1/10 times the depth of the trench.